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 Field of Chemistry

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1. Q. What methods are utilized in the selection of students?

A. During the 20 year period, 1921-1941, there were different methods used in selecting students for the institutions of higher learning. At the beginning membership in the Communist Party and the Komsomol Youth Organization was the most important factor used in determining which applicants would be admitted to the institutes and universities. Children of former priests and rich land owners of the peasant group were not acceptable as students. Since I am most familiar with the years 1936-1940 my answers to the following will apply to that period.

2. Q. What influence did political affiliations have in determining selection of the individual to the institution of higher learning?

A. Political connections or the political background of a candidate to an institution of higher education had a great deal of influence. At every institution there existed a secret department which obtained political information concerning the candidates. Any student who was believed to have anti-Communist feelings had no chance of entering an institution of learning. Members of the Communist Party and Komsomol Youth Organization were always given preference.

3. Q. What influence did the economic position of student applicants have?

A. The economic position of the applicant was not the deciding factor in determining his entrance into the educational institution. In the Ukraine, for example, as a result of the famine of 1932-33, there was extreme poverty so that the bulk of the students came from the poor classes. There was, however, a small group of individuals who were well off financially, such as members of the Communist Party, directors of large institutions and organizations, NKVD workers and certain Communist ruling groups who received large amounts of money for their

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services as compared to the salaries received by peasants, laborers, government employees, etc. Because of their very well placed political memberships and connections, this small, well-to-do group enjoyed the highest privileges in gaining admission to any institution of learning.

4. Q. What influence did scholastic achievement have in determining admission to an institution of higher learning?

A. The scholastic achievements of the applicant had a certain influence in determining whether or not he was to be admitted to the institution. Students who graduated from the gymnasiums (high schools) with an average of approximately 70 could not enter an institution of higher learning. The USSR, however, is a country where regulations can be by-passed if it is convenient for the Soviet system. For example, suppose Mr "X" was not accepted by an institution of higher learning. The reason for his non-acceptance was not given. Mr "X", however, passed all of his examinations with high marks. One can therefore conclude that Mr "X" was rejected because he was politically unsound.

5. Q. What influence did entrance examinations have on the selection of students?

A. Every student applicant had to pass examinations in the following subjects: (1) Foreign languages (German, English or French) depending upon the requirements of the school, (2) Mathematics (Algebra, Geometry, Trigonometry, and the bases of Higher Mathematics), (3) Chemistry, (4) Physics, (5) History.

6. Q. What were the monetary requirements for students at the various institutions of learning?

A. According to a law passed in 1940 or 1941, every student attending any institution of higher education had to pay between 300-700 rubles per year. Those who were good students received a scholarship of 70-100 rubles monthly. About 15% of all students were scholarship students. Scholarships were paid by the Narkomat* to which belonged certain institutions.

7. Q. Did the student applicant have any choice as to the institution he wished to attend?

A. Students could choose any institutions they desired. Love of technology was especially developed in the secondary schools and therefore there were not as many applicants at the institutions of economics, education and medicine. It was, therefore, easier to enter one of these latter schools than a technological institute. Many students desired to avoid the draft and therefore entered military schools.

8. Q. What was the quality of the textbooks?

A. The quality of the textbooks depended on the content, that is technical or political.

9. Q. What was the availability of textbooks?

A. There were plenty of textbooks available in the USSR on all subjects.

10. Q. What were publication dates of various textbooks?

A. Textbooks always had a recent publication date. For example, a student entering an institution in 1940 used texts which were published in 1937-39. This was because every year the texts were published in great numbers. Almost every year certain texts were eliminated from use because the authors of such texts were arrested by the security agencies. For example, Ukrainian historian M Hrushevsky died in 1934 during his banishment to the Caucasus. After his death all the history texts of M Hrushevsky were destroyed in every library and new editions or publications were prohibited. Another academic-mathematician, M Kravchuk, was arrested in 1933 by the NKVD. Soon after all his texts were eliminated from use in educational institutions.

* Peoples' Commissariat of National Minorities.

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11. Q. What were the sources of information (were texts mainly translations of foreign books)?
- A. The books of Soviet authors were published in greatest numbers. There was very little information from Europe and the US. But many foreign authors' books were translated. For example, Nolman's "Organic Chemistry" was translated from German into Russian; from English, "Chemistry of Leather", by Wilson, published in London; from English, published in the US, "Leather Chemistry", by Stassen, plus many others. But in comparison to Soviet publications, there were very few.
12. Q. What was the quantity and type of problems and illustrations?
- A. The number of illustrations in the Soviet textbooks was very small when compared with texts published in the US. It is explained by the poor printing technique in the USSR. There were a great many different types of problems on each subject set forth in the various textbooks.
13. Q. What errors occurred other than typographical?
- A. There were deliberate errors found primarily in political and propaganda publications. For example, there was no mention made in textbooks of the 1932-33 famine in the Ukraine where seven million people, mostly peasants, perished. Neither was there any mention of forceful collectivization. Another example was the fact that there was never any comment made about the concentration camps in Siberia where there were 15 thousand prisoners. In the technical publications, Soviet technology was given the first place and Soviet scholars and scientists were given priority in technological discoveries, which was not always true.
14. Q. How many students were in a class?
- A. The average number of students in a class was from 35 to 40. My answers pertain to classes in chemistry.
15. Q. How many hours of instruction were given?
- A. The average number of hours per day was about six. Each academic hour was about 45 minutes. Breaks between hours were five minutes.
16. Q. What training aids were most used?
- A. For the chemical student, laboratories were the most important in training aids. In the first year a student had laboratory practice in inorganic chemistry and in physics. In the second year he had to pass various tests given in the laboratory of organic synthesis and also in the laboratories of qualitative and quantitative analysis. In the third year there was instruction in the laboratory of physico-chemistry and general analysis. In the fourth year there was laboratory work on technical analysis. Libraries also played a very important part as a training aid.
17. Q. What use was made of graduate assistants in the presentation of the courses?
- A. Graduate assistants helped the professors give problems to the students in the chemical laboratories. They also helped students in their various problems. Graduate assistants had to have a specialized background in the subject in which they were assisting.
18. Q. What was the quality of the professors?
- A. Professors, in the full meaning of the word, very often did not fulfill the requirements which are a necessity in the European and US world. Basic groups of professors belonged to the old tsarist system. A great number of them were destroyed in the beginning of the revolution 1917-1921. Some of them died of old age. The groups which were prepared by the Soviets did not compare with the quality of old professors. In 1930 Stalin proclaimed a slogan "Cadres shall decide everything". Bolsheviks realized the importance of their own Communist nucleus and turned to

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their own followers to conquer some branches of science. However, one cannot deny that in the technological institutes the heads of the departments were men who were highly qualified and had written many scientific articles.

19. Q. What was the influence of a particular area or what industrial demands were there on the scope of instruction?

A. Industry had a great influence on the institutions of higher education. It was impossible for the student to avoid the industrial problems if he followed the subjects which were taught. In order that theory should go hand in hand with industry, every student, beginning with his second year, had to take certain industrial practice training. The first industrial training period lasted about two months. The duty of the student was to learn, at the factory or the plant he was sent to, its technological processes, make certain calculations, and get generally acquainted with the laboratory. The second training period lasted about two and one half months. Here the student had to master the work at a chemical laboratory. The last and the third training period was for a period of three months. It was spent on the graduation problem of the student. The student had to collect materials on the use of water, electricity, fuel and chemical materials in the given factory and gather information as to other important factors that were part of his graduation project.

20. Q. What is the quality of laboratory instruction and facilities?

A. Laboratory instruction and equipment were very good.

21. Q. What was the average size of a laboratory class?

A. 35 to 40 students.

22. Q. What amount of instruction was received in the laboratories?

A. About 40% of the chemical student's time was spent in the laboratory.

23. Q. Were graduate assistants used in the laboratory?

A. Yes.

24. Q. What was the size of equipment utilized?

A. This depended entirely on the type of experiment being studied. There was sufficient equipment available for all kinds of experiments.

25. Q. What was the scope and extent of laboratory reports?

A. This depended entirely upon the type of experiment being undertaken.

26. Q. What time was spent on specific courses in organic, analytical, physical, etc?

A. Organic chemistry 220 hours; analytical chemistry 160 hours; physical chemistry 130 hours (one academic hour - 45 minutes).

27. Q. What was the extent of individual work and group demonstrations?

A. One half time individual work, one half time group work.

28. Q. Was training on a pilot plant scale and in unit processes?

A. Not where I studied.

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29. Q. What system of examination was used?

A. Oral, written and laboratory. There were two oral, two written and two or three laboratory examinations per semester.

30. Q. Were the examinations subjective or objective?

A. This depended on the professor. Usually the teaching of technical subjects was objective and the teaching of a philosophical or political subject was subjective.

31. Q. Were there any standardized examinations?

A. No.

32. Q. What are the methods of grading examinations?

A. Grades ranged from Very Good to Good, Satisfactory and Unsatisfactory.

33. Q. What weight was given to examination grades?

A. The examinations usually counted about 90%.

34. Q. What effect did political influence have in grading?

A. This depended entirely upon the professor. Some paid no attention whatever to political influence.

35. Q. Can you give any sample types of examinations?

A. No I cannot. All examinations varied a great deal.

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37. Q. What amount of time was spent by leading scientists in individual research?

A. Scientists taught and spent about 50% of their time in the educational laboratories. The balance of their time was usually on some independent research problem.

38. Q. What time was spent by leading scientists on industrial or governmental problems?

A. If the leading scientist was not teaching he spent all of his time on such problems.

39. Q. What degree of activity in the direction of graduate research was spent by leading scientists?

A. This depended on the amount of time the scientist had available and the type of research engaged in by the graduate student.

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40. Q. What was the caliber of instructors generally?
- A. The caliber of instructors varied from fair to good. Most all of the full professors, however, were good.
41. Q. What is the method of assigning research topics?
- A. There were several series of topics from which a student could choose.
42. Q. What time is spent by the student on research?
- A. 70% of the student's time was in the laboratory and about 30% on theory.
43. Q. Can you give a sample of a research topic?
- A. "The Use of Dies"; "Organic Matter in Qualitative Analysis"
44. Q. In regard to theses requirements, what subjects were most popular?
- A. Subject was usually given by the professor and varied according to the amount of training the student had.
45. Q. Were negative results acceptable in theses?
- A. Yes.
46. Q. What influence did industry, education, Ministry of Chemical Industry, or the Academy of Science have on the assignment of theses topics?
- A. Industry, as such, asserted a great deal of influence. The Ministry of Education and Ministry of Chemical Industry also influenced theses subjects because they supported the schools financially. The Academy of Science had no great influence because it also depended upon government industrial organizations for financial support.
47. Q. Was it necessary and customary to publish a thesis?
- A. There was a custom of thesis publication; usually at the end of the term a synopsis was printed in the English or German language.
48. Q. Was there a method of defending a thesis?
- A. There was a public defense of the thesis in the form of a debate.
49. Q. Can you give any samples of research projects?
- A. No.
50. Q. What were the curriculum requirements and credit hours necessary for graduation?
- A. For my own particular studies see the attached supplement to the diploma which I received. [See supplement to diploma at end of report]
51. Q. Was a thesis or the completion of a research project necessary for graduation?
- A. Yes, a thesis or a report was very necessary.
52. Q. What influence did political doctrines have on graduation?
- A. Political doctrines were all important. I know of a case where a student about to graduate received a letter from a friend from abroad. He was not permitted to graduate as a result even though the letter was harmless.

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53. Q. Is the training of metallurgists slanted toward a particular field, i.e., physics, mechanics, engineering, etc?

25X1 A. [REDACTED] However, I do know that their training was slanted toward engineering.

54. Q. What are the percentages of failures and incompletions?

A. 25% of all students who entered institutions of higher education failed, mostly because of political reasons. Failures, however, could be made up without end. Failures were most prevalent in (1) Resistance of Matter, (2) Organic Chemistry, (3) Higher Mathematics.

55. Q. What was the method and place of subsequent assignments in the case of failures and incompletions?

A. If a student did not make up his failures or was dropped for political reasons, he was through as a student. However, if the failures were made up it did not influence too much his future assignment.

56. Q. What methods are employed in the assignment of graduates?

A. If one had a friend in a particular industry where there was an opening it was possible to get an assignment to a choice post. Ordinarily, however, the privilege of choice depended on the number of openings.

57. Q. What industrial opportunities were there following graduation?

A. There were numerous industrial opportunities.

58. Q. What industrial training was there in coordination with academic learning?

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A. [REDACTED]

59. Q. Were students often transferred to other institutions of higher education?

A. Very rarely.

60. Q. What was the effect of political doctrine on assignment?

A. Party members were always given a choice of assignment opportunities.

61. Q. What facilities are available for additional training in order to keep pace with technical advancement?

A. An engineer is so absorbed in his own life and work that he has no time to keep abreast of the advance in his particular field. There are good Soviet magazines which he can read but he does it only occasionally. There is almost no independent laboratory work to enable a scientist to do research on his own.

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